

1986

A Test-Retest Reliability Study of the Valpar Pre-Vocational Readiness Battery: Component #17, Vocational Interest Screening

Roger K. Anderson

Eastern Illinois University

This research is a product of the graduate program in [Educational Administration](#) at Eastern Illinois University. [Find out more](#) about the program.

Recommended Citation

Anderson, Roger K., "A Test-Retest Reliability Study of the Valpar Pre-Vocational Readiness Battery: Component #17, Vocational Interest Screening" (1986). *Masters Theses*. 2647.
<https://thekeep.eiu.edu/theses/2647>

This is brought to you for free and open access by the Student Theses & Publications at The Keep. It has been accepted for inclusion in Masters Theses by an authorized administrator of The Keep. For more information, please contact tabruns@eiu.edu.

THESIS REPRODUCTION CERTIFICATE

TO: Graduate Degree Candidates who have written formal theses.

SUBJECT: Permission to reproduce theses.

The University Library is receiving a number of requests from other institutions asking permission to reproduce dissertations for inclusion in their library holdings. Although no copyright laws are involved, we feel that professional courtesy demands that permission be obtained from the author before we allow theses to be copied.

Please sign one of the following statements:

Booth Library of Eastern Illinois University has my permission to lend my thesis to a reputable college or university for the purpose of copying it for inclusion in that institution's library or research holdings.

May 7, 1986

Date


Author

I respectfully request Booth Library of Eastern Illinois University not allow my thesis be reproduced because _____

Date

Author

A Test-Retest Reliability Study of the Valpar Pre-Vocational

Readiness Battery
(TITLE)

Component # 17 - Vocational Interest Screening

BY

Roger K. Anderson

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

Master of Science in Education

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

1986
YEAR

I HEREBY RECOMMEND THIS THESIS BE ACCEPTED AS FULFILLING
THIS PART OF THE GRADUATE DEGREE CITED ABOVE

4/28/86
DATE

[REDACTED]

ADVISER

4/28/86
DATE

[REDACTED]

COMMITTEE MEMBER

4/28/86
DATE

[REDACTED]

COMMITTEE MEMBER

4/28/86
DATE

[REDACTED]

DEPARTMENT CHAIRPERSON

**A Test-Retest Reliability Study of the Valpar
Pre-Vocational Readiness Battery
Component # 17 - Vocational Interest Screening**

Roger K. Anderson

**Eastern Illinois University
Master of Science in Education**

1986

Abstract

The purpose of this study was to determine a set of test-retest reliability coefficients of the Valpar Pre vocational Readiness Battery, Component 17, Subtest 3, Vocational Interest Screening for both male and female students receiving direct special education services at a rural high school in central Illinois. A sample was drawn on 25 subjects who were diagnosed as having learning disabilities, mental retardation, or social-economic educational handicaps and who were enrolled in the special education funded cooperative work training program at the school. Research was conducted on 16 males and 9 females (mean age = 17.1) who were administered the Valpar Vocational Interest Screening under identical circumstances over a 30-day test-retest interval. Using a weighted kappa statistic, a chance-corrected product-moment correlation was obtained as an indicator of individual subject and test-retest reliability. Though highly scattered, correlation coefficients centered at .6 for the male group and .61 for the female group and were found to be significant at the .05 level. The results indicated that the Valpar VIS is a moderately reliable vocational interest measurement within an undefined special education population. Implications for future research were discussed.

Dedication

This thesis is dedicated to my Grandfather and Grandmother, Mr. and Mrs. Roy E. Boyles, who instilled within our family the immeasurable value of education. Their utmost faith in me has been and continues to be an inspiration to strive toward excellence.

Acknowledgements

It is with sincere gratitude that I recognize the following people who have contributed toward the completion of this research paper and my master's degree.

To my wife, Marcia, and daughter, Claire, who have allowed me to spend many long evenings and weekends in the research and preparation of this paper.

To my father and mother, Mr. and Mrs. Ronald E. Anderson, who taught me to never settle for anything less than excellence.

To my parents-in-law, the Honorable and Mrs. James R. Watson, who have been supportive throughout the years.

To Dr. John Jacobs who held the key and inspired me to explore a vast field of knowledge which had been otherwise closed to an unenlightened mind.

To Dr. Art Hoernicke who, as a friend, helped me to further refine my interest and become goal directed in my search for knowledge.

To Dr. Thomas McIntyre who shared many hours, insights, and friendship.

To my graduate committee, Dr. Andrew Brulle, Dr. Kathlene Shank, and Dr. Patricia Barnhart whose patience, encouragement, and gentle guidance inspired me to complete this thesis.

To the Illinois Department of Rehabilitation Services who allowed me the free use of the Valpar Prevocational Readiness Battery for research.

To Mr. David Selby who afforded me many opportunities to study the Vocational Interest Screening.

To Cumberland District #77 and Mrs. Chris Scism in allowing me to conduct research in the Cooperative Work Training Program.

And finally, to the spirit of the pursuit of knowledge which shows that there is still so much more to discover.

Table of Contents

Heading	Page
Introduction.....	1
An Historical Perspective.....	1
Rise of Vocational Interest Assessment and Thinking.....	2
Problem.....	5
Legislation and Policies.....	8
Theories of Occupational Choice.....	10
Theories of Vocational Development.....	11
Development of Vocational Interest Measurements.....	13
Vocational Interest Measurements for Individuals with Mental Handicaps.....	15
Test-Retest Reliability Data on Selected Tests.....	19
Considerations in Vocational Interest Measurement.....	20
Summary of the Review of Literature.....	22
Need for this Study.....	24
Method.....	28
Subjects.....	28
Apparatus.....	29
Procedure.....	30
Reliability.....	31
Statistical Procedure.....	32

Results.....	32
Table 1.....	34
Table 2.....	35
Table 3.....	36
 Discussion.....	 37
 References.....	 43
 Appendix.....	 48

A Test-Retest Reliability Study of the Valpar

Pre-Vocational Readiness Battery

Component # 17 - Vocational Interest Screening

An Historical Perspective

Prior to the late 19th century, occupations were not generally regarded as matters necessitating considerable forethought or planning (Kroll, Dinklage, Lee, Morley, & Wilson, 1970). Occupations for the common man were rarely chosen, and when choice was possible, alternatives were few. Occupations were generally learned through apprenticeship or indentured servitude and were usually passed down from generation to generation within the family. For example, if a man was a wheel maker in the 16th century, chances were that his father had been a wheel maker as well. Moreover, it was equally likely that his son would follow him in the trade. In fact, his surname might very well be "Cartwright," or "Smith", or "Carpenter", etc.--a name related to his vocation (Kroll, et al., 1970; World Book Encyclopedia, 1980).

Before the Industrial Revolution, occupations were only moderately differentiated between agriculture or trade classifications (Kroll, et al., 1970). Sons customarily followed their fathers into agriculture or trade work. With the onset of the Industrial Revolution, however, came an ensuing change in demography. Families gravitated from rural settings to the cities to gain employment at one of the many factories. New technologies

arose and jobs were created overnight. Labor was designated as being skilled, semi-skilled, or unskilled in nature, and credence was given to the terms "blue color" and "white color" worker. A change had permeated the rural lifestyles that had been known for hundreds of years.

Today, more than ever, a man or woman entering the work world has a spectrum of alternatives from which to choose a vocation. The Dictionary of Occupational Titles (1977) lists over 20,000 specific job entries. Kroll et al. (1970) reported that:

Man's potential for mobility - both physical and social - has been greatly increased. . . . The choices he makes . . . determine the person he [she] becomes. . . . If tomorrow's worker is to maintain a healthy, creative relationship with the environment through work, he [she] must become more actively engaged in the process of planning, reflecting upon, and purposing his [her] behavior at work (pp. 2-3).

If this is the case in the global aspect, it may be applicable to the special population as well.

The Rise of Vocational Interest Assessment and Thinking

The earliest concerns with interests came from the field of psychology in the last decade of the 19th century. The noted psychologist William James considered interests to be a ". . . cognitive function of the mind,

instrumental in organizing an individual's experience" (Cole & Hanson, 1975, p. 3). The educators Monroe (1909) and Hall (1911) began critical investigation of interest as it related to education. Each viewed interests ". . . as motivating forces both in education and in life" (cited in McRae, 1959, p. 10). Experimentation with the measurability of interests, however, was not undertaken until the early 1920s. The first standardized measurement instrument, the Carnegie Interest Inventory (1921), stemmed from projects used in employee counseling at the R. H. Macy Company in New York City. Aside from being novel, the device did much to generate further inquiry into the concept measuring interests. By 1939, over 15 measures of "vocational interests" were listed in Buros' first Mental Measurements Yearbook (Datta, 1975, p. vii).

An early recorded theory of interests and self was reported by Kitson in 1925 (cited in Hanson, 1974). Kitson equated interests with an attempt to identify one's self. Subsequent investigations by Strong (1927), Fryer (1931), and Thorndike (1935) considered interests to be ". . . related to attitudes and abilities, as traits to be identified when counseling with the individual" (cited in McRae, 1959, p. 10). They felt that interests should not only be perceived as single activities, but in an overall pattern which may help identify particular vocational preferences. Bingham (1937) saw interest ". . . as a tendency to become absorbed in an experience and to continue in it" (cited in Cole & Hanson, 1975, p. 3).

Since 1941, the concept of interest has become firmly associated with dimensions of personality, (e.g., developmental growth and self concept). Studies by Darley (1941), Bordin (1943), Berdie (1944), and Carter (1944) suggested that interests were an extension of personality. Darley (1941), in particular, maintained that ". . . occupational selection and elimination were functions of personality type as well as of abilities and/or aptitudes" (Cole & Hanson, 1974, p. 4). Super (1949) wrote:

Interests are the product of interaction between inherited aptitudes and endocrine factors on the one hand, and opportunity and social evaluation on the other. Some of the things a person does will bring him the satisfaction of mastery of the approval of his companions, and result in interests. Some of the things his associates do appeal to him and, through identification, he patterns his actions and interests after them; if he fits the pattern reasonably well he remains in it, but if not he must seek another identification and develop another self-concept and interest pattern (p. 406).

In summary, the concept of interests has been viewed by early researchers as psychological functions which further one's self-development. Interests were not perceived as isolated entities but rather as constellations of individual likes and dislikes which ultimately led to relatively consistent patterns of

personality and behavior. Although interests were basically considered to be cognitive in nature, they were the product of both genetic factors and environmental influences which, through careful identification and nurture, can lead to theoretical vocational satisfaction.

The Problem

The advent of Public Law 94-142, the Education for All Handicapped Children Act of 1975, brought national attention to the education and assessment for individuals with handicaps. Encompassing this landmark legislation were other federal laws and acts that focused more directly on the concept of vocational education for populations with special needs. Section 504 of the Vocational Rehabilitation Act of 1973 mandated nondiscrimination provisions for individuals having handicaps. Title II of the Vocational Amendments of 1976 required that vocational programming in each state be consistent with the mandates of PL 94-142. This regulation supported PL 94-142 by ensuring that 10% of vocational funding be spent for services that are in excess of expenditures for the nonhandicapped student (Kapes & Parrish, 1983). In addition, Title II of the Vocational Education Act (amended 1976) required a 50% matching of these monies from state and local funding to ensure vocational programming for individuals with special needs (cited in Berdine & Cegelka, 1980).

With regard to this relatively recent legislation,

however, there is a lack of assessment tools which truly enhance job training and placement for individuals comprising the special population. One such deficiency lies in the area of vocational interest measurement. For example, the Buros' Eighth Mental Measurements Yearbook, Volume II (1978) listed only four vocational interest assessment tools which were cited for specific use with individuals having mental retardation. Buros listed several other tests which could be suitable for use with this special population but were not, however, specifically cited to do so.

Given federal incentives to conduct vocational assessment, some states have taken the initiative in developing studies and guidelines for implementing comprehensive evaluation systems. The Texas Education Agency (1988) compiled one such study which listed 104 evaluative instruments that may be used in the vocational assessment of students with handicaps. The tests were categorized into three basic types which measure (a) aptitude and basic skill, (b) interests and work values, and (c) work adjustment competencies. From this list, only 37 were included in the Interests and Work Values categories. Of those, only a portion were designated for exclusive use as vocational interest measurements of individuals having mental handicaps.

The terms special population and handicapped do not explicitly denote a single homogeneous group. Within PL 94-142, 11 handicapping conditions were defined in

relationship to their individual effect on educational performance (Kapes & Parrish, 1983). The human conditions circumscribed within these definitions are quite diverse however. For example, an individual having mental retardation is involved in a completely different set of conditions than is a person with a speech impairment or a visual handicap. Moreover, it is possible for a person to have an identified handicapping condition and not require a special educational service.

The terms career guidance and career assessment were generally considered to be generic terms for what is usually referred to in the literature as vocational evaluation or vocational assessment. Nadolsky (1981) defined vocational evaluation as:

A specialized type of vocational guidance service designed to assist individuals with special needs in determining their vocational potential. . . . It is the experiential phase of vocational evaluation and its practical, realistic work-related techniques and procedures provide the core content for vocational evaluation and set it apart from traditional programs of vocational assessment and guidance (p. 6).

Kapes and Parrish (1983) reported that the term vocational evaluation was developed by the professionals who work with adults in the field of vocational rehabilitation. When it became apparent that the mandates of PL 94-142

required public schools to provide a free and appropriate education to all handicapped youth, many methods of vocational rehabilitation were adapted for use in preparing those students for employment (Krantz, 1979). In adopting these methods of vocational rehabilitation, public school educators chose the term vocational assessment to refer to their version of the individual evaluation process. Salvia and Ysseldyke (1978), Albright and others (1978), Sitlington (1980), and Peterson (1981) all used the term to indicate appraisal of a student's vocational potential (cited in Kapes & Parrish, 1983).

Legislation and Policies

Since 1973 there has been significant legislation specific to the rights of individuals with handicaps. Most notable are the Vocational Rehabilitation Act of 1973 (Public Law 93-112), the Education for All Handicapped Children Act of 1975 (Public Law 94-142), Title II of the Education Amendments of 1976 (Public Law 94-482), and the Office of Civil Rights Vocational Education Programs Guidelines (Office of Civil Rights, 1979). One theme was common to all. The Vocational Rehabilitation Act of 1973 prohibited discrimination against persons with handicaps in regard to employment, education, program accessibility, health, welfare, or social services. Public Law 94-142 mandated specific guidelines to assure basic rights for students having handicaps (e.g., evaluation and placement procedures into special education programs). PL 94-142

also mandated that tests and evaluation materials be free from racial and cultural discrimination and that placement decisions not be based upon a single score from a test of intelligence. Moreover, PL 94-142 stated that materials should be administered in the student's primary mode of communication, be validated for the purpose for which they are used, be administered by trained personnel, and reviewed by a multidisciplinary team. Title II of the Education Amendments of 1976 reinforced the mandates of PL 94-142 by requiring that vocational programming in each state adhere to the state plans required by PL 94-142. The Office of Civil Rights guidelines of 1979 addressed vocational counseling of individuals with handicaps as it pertained to admission criteria, recruitment, and placement into vocational programs (cited in Kapes & Greenwood, 1979).

This legislation has many implications for those involved in the vocational assessment of individuals with handicaps. First, it is imperative that assessment be sensitive to a student's needs so that the handicap does not bias his or her performance. Second, assessment tools used to evaluate an individual's performance should be free from any inherent bias or deficiency so as to cause inadvertent misdiagnosis or evaluation (PL 94-142, 1975). Moreover, some tests may not be useful at all with certain populations. Others may be adaptable through modification with the use of specialized answer sheets, longer time periods, or interpreters. In all cases, however,

assessment tools must be sensitive to the special needs of the individual in order to assure that what is measured is valid, fair, and appropriate for that individual.

Theories of Occupational Choice

Several theories from the field of guidance and counseling have been developed in an effort to explain the phenomena of occupational choice. Among the first was Parsons' trait and factor theory (1909). Parsons held that occupations should be matched to the unique traits of the individual. He advocated the three step vocational guidance process of "1) studying the individual, 2) studying occupations, and 3) matching the right person with the right job" (cited in Zaccaria, 1970, p. 26). Other theories dealing with vocational choice were presented by Brill (1949), Forer (1953), Roe (1956), Katz (1963), Bordin (1963), and Hoppock (1967). Brill's, Forer's, Bordin's, and Roe's theories were centered around the interplay between a human's needs and drives. These need-drive theories of motivation suggested that a person's needs in early life become transformed into drives ". . . which impel the person toward need-satisfying objects, persons, or activities [in later life]" (Zaccaria, 1970, p. 27). Hoppock's theory summarized other general theories, maintaining that occupations are chosen to meet needs and that occupational choice is always subject to change when believed that a change will better meet one's needs. Presumably, if a

good occupational choice is made, the individual's needs have been met and he/she is likely to remain with that occupation. On the other hand, an inadequate choice leads to unfulfilled needs, failure, or maladjustment within the occupation.

Theories of Vocational Development

Similar to the theories of occupational choice were theories related to vocational development. The term vocational development denotes the dynamic process in which a person explores his/her environment and arrives at an occupation. Other than choosing an occupation, the individual makes a series of occupational and occupationally-related choices at different stages in life which, in turn, result in vocational development. In contrast to the theory of occupational choice, vocational development emerges over a long period of time. Theories of vocational development were closely related to theories of human development. In studying the literature, one can find many of the familiar classic names and studies which have pervaded the fields of psychology, education, and guidance and counseling: (e.g., Terman, Erikson, Havighurst, Maslow, Guilford).

Holland (cited in Brown, 1970) reflected that vocational choice was the product of the interaction of heredity with a variety of cultural and personal forces such as influences of peers and parents, social standing, culture, and physical environment. It was viewed that for

each personal orientation, there was a corresponding occupational environment in which to dwell—a constellation of related vocations. The individual seeks this occupational environment on the basis of his/her own personal behavioral stereotypes. Super (1957) viewed vocational orientation in terms of stages of vocational development. Super suggested that one's vocational orientation is a direct reflection of his/her current developmental stage in life. Within those stages, vocational preference is based on (a) fantasy, (b) likes and dislikes, (c) ability, (d) values and opportunities, and (e) reality. Super maintained that an individual's vocational thinking stems from his/her perceived self-concept at each stage of development.

In 1973, Holland summarized many of the above theories and definitions. Holland wrote:

Vocational interests are simply another aspect of personality. . . . Just as we are more comfortable among friends whose tastes, talents, and values are similar to our own, so we are more likely to perform well at a vocation in which we "fit" psychologically (p. 7).

Clearly, there was no specific agreement as to the nature of vocational interests. Interests were viewed as a constellation of an individual's likes and dislikes which, through nurture and identification, ultimately lead to a relatively consistent pattern of vocational behavior.

Development of Vocational Interest Measurements

The basic goal of measuring vocational interests was to provide information to help identify occupational situations which would be satisfying and those which would not. The trait and factor theories, psychodynamic theories, and psychosocial theories were interwoven within the field of vocational psychology to provide a bases for the development of modern vocational interest assessment.

Two rationales, or fundamental principles, were used as bases for creating workable vocational interest inventories: the people-similarity rationale and the activity-similarity rationale. Darley and Hagenah (1955) noted, "The most general clue to an understanding of interest measurement is found in the old adage that birds of a feather flock together" (p. 19). From this line of thinking, the people-similarity rationale was formulated. It stated that if a person likes the same things that people in a particular job like, the person will be satisfied within that job. The activity-similarity rationale stated the idea in a different way: If a person likes activities similar to the activities required by a job, that person will like those job activities and will consequently be satisfied with his/her job. Each rationale has its own inherent merits and problems in that within each, it is difficult to measure and validate postulations.

Probably, the oldest and most widely studied vocational interest measurement was the Strong Vocational

Interest Blank which was developed by Edward K. Strong in 1927. Though Buros' Eighth Mental Measurements Yearbook (1978) no longer listed it, per se, it was one of the original mainstays in vocational interest measurement for over 40 years. More than 1,000 studies related to the SVIB were cited in the Seventh Mental Measurements Yearbook (1972). Since then, as Blake and Fabry reported in 1979, the SVIB evolved into the Strong-Campbell Interest Inventory (SCII), assimilating changes through the incorporation of Holland's Occupational Classification System. Other widely studied vocational interest measurements were the Kuder Preference Record, developed by G. Frederic Kuder (1934), and the more recent Kuder Occupational Interest Survey (1956). Much of the interest generated in vocational interest measurement grew out of the study of Strong's and Kuder's work.

Cole and Hanson (1975) reported that the concept of vocational interest measurement has been changing over the past few decades. Both Strong and Kuder wrote that interest scores could be used to help individuals set vocational goals which would be likely to bring the greatest personal job satisfaction. One inherent problem, however, remains in that vocational interest scores, on their own merit, are not necessarily valid predictors of future vocational satisfaction or success. Other dynamic processes involving an individual's personal attributes, abilities, and values are viewed as important factors as well. As a result, the general use of vocational interest

inventories as assessment tools in career-guidance programs has been changing to more effectively meet society's needs. Scores are no longer merely reported or interpreted by a counselor but are instead used to stimulate career exploration and help broaden an one's career options.

Vocational Interest Measurements for Individuals with Mental Handicaps

The pioneer effort to develop a vocational interest tool for use with individuals with mental handicaps did not occur until the mid 1960s. Parnicky, Kahn, and Burdett (1965) reported that:

Various studies concerned with the vocational adjustment of educable retarded youth [sic] have pointed out that work interests, habits, and motivation are far more critical variables than their specific job capacities and skills (Abel, 1940; Cohen, 1960; Hartzler, 1951; Michal-Smith, 1950; Windle, 1961) (p. 393).

Parnicky et al. (1965) found that unskilled and semi-skilled jobs in which persons labeled mentally handicapped are most frequently engaged ". . . required less in the way of specific skills and knowledge, and more in the way of: 1) general appreciation of employers' expectations of workers, 2) ability to relate well with fellow employees, and 3) a positive interest in the job area" (p. 393). Becker (1973) cited that vocational

studies by research personnel (e.g., Super, 1940, 1945, 1954; Berdie, 1944; Carter, 1944; Barnett, 1952; Brogden, 1952; Gulford, 1954; Strong, 1955; Roe, 1957; and Layton, 1960) showed a "definite positive relation between inventoried interests and job satisfaction" (p. 128). Moreover, subsequent studies by DiMichael & Dabelstein, 1947; Nunnally, 1959; Cronbach, 1960; and Cravin, 1961, indicated that inventoried interests showed more stability than expressed interests and provided more useful data for prediction (cited in Becker, 1973). Until 1964, the marketed vocational interest inventories were not applicable for use with individuals having mental handicaps. The Strong Vocational Interest Blank and the Kuder Preference Record required a reading ability far beyond that achieved by even the individual labeled mildly mentally handicapped. Moreover, as Parnicky et al. reported, ". . . [the tests] concentrate on job areas and levels for which the retarded [sic] cannot realistically aspire" (p. 393).

Several vocational interest tests, such as the Vocational Apperception Test (1949) and the Geist Picture Interest Inventory (1959), were developed to ease the reading requirement intrinsic to other vocational interest inventories. As these two inventories included many job areas far beyond the realistic vocational reach of individuals having mental handicaps, the tests were deemed inappropriate for use with that population (Parnicky, et al., 1965). Ulrich made an attempt to develop a suitable

test in this area with the development of the Picture Inventory of Semi-Skilled Jobs (1960); but, as reported by Parnicky (1965), " . . . standardization was never carried to a point which would permit confidence in its use for individual prediction [of job success]" (p. 394).

In 1964 Becker and Ferguson began exploring a series of " . . . meaningful evaluation techniques that could be used directly in job placement of trainees in the various work areas" (Becker & Ferguson, p. 20) on the grounds of the Columbus State School for the Mentally Retarded, [Columbus, Ohio]. This study became the preliminary research project for what was later to evolve into the AAMD-Becker Reading Free Vocational Interest Inventory (R-FVII) (1975). In a similar effort, Parnicky, Kahn, and Burdett (1965) developed the Vocational Interest and Sophistication Assessment (VISA), a pilot research project funded by a grant from the Vocational Rehabilitation Administration (VRA No. 425). Parnicky et al. identified a need for an objective test which would: (a) be reading-free, (b) have appropriate content for individuals with mental handicaps, (c) discriminate subjects' vocational interest, and (d) permit evaluation of subjects' knowledge of job conditions.

The VISA and R-FVII contained similar formats: sketches of workers engaged in work activities requiring vocational skills obtainable to individuals labeled mentally handicapped. The pictures were presented in a forced-choice format espoused by Cronbach (1946): a

sequence requiring the subject to choose the picture more favorable with his/her own vocational interests. In its present form, VISA measures interests in 11 job clusters, 7 for males and 4 for females. The male clusters include: garage, laundry, food service, maintenance, farm and grounds, materials handling and industry. The female clusters include: business and clerical, housekeeping, food service, and laundry and sewing. A separate form for each sex takes approximately 30 minutes to complete (Buros, 1978).

The R-FVII measures interests in 11 job clusters for males and 8 for females. The male clusters include: automotive, building trades, clerical, animal care, food service, patient care, horticulture, janitorial, personal service, laundry service, and materials handling. The female clusters include: laundry service, light industrial, clerical, personal service, food service, patient care, horticulture, and housekeeping. A separate form for each sex takes approximately 45 minutes to complete (Buros, 1978).

Kapes and Parrish (1983) presented a list which was compiled by the Texas Education Agency consisting of instruments that may be useful for the vocational assessment of individuals with handicaps (pp. 54-58). From this list, two other vocational interest inventories were found for exclusive use with the population identified as having mental handicaps. Those instruments are the Hall Occupational Orientation Inventory and the

Wide Range Interest-Opinion Test. Other measurements were indicated by the Texas Education Agency as suitable for use with special populations but were not necessarily appropriate for use with the population defined as mentally handicapped.

Test-Retest Reliability Data on Selected Tests

The AAMD Becker Reading-Free Vocational Interest Inventory and the Vocational Interest and Sophistication Assessment reported test-retest reliability coefficients observed with subjects having mental handicaps. The AAMD R-FVII manual reported coefficients, based on a two-week interval, as being in the .70s and .80s. Coefficients ranged from .68 to .92 with a median of .82. A greater reliability was reported among the institutional subsamples which consisted mainly of older and more experienced examinees as opposed to the school subsample consisting mainly of adolescents. The norms were based on a nationwide sample of 3,407 males and 3,006 female individuals who were labeled educable mentally handicapped. As of 1978, it was reported that research was yet needed to study the usefulness of this test on the population of individuals labeled as trainable mentally handicapped.

Panicky, Kahn, and Burdett (1971) reported normative data on the VISA from approximately 3,000 individuals with mild mental handicaps in institutions, schools, and workshops in seven northern states and around Washington,

D.C. The test-retest reliability coefficients were established for both sexes over a period of 1 month (using a subsample of $N=129$) and over a longer 12 to 18 month period for the remaining population. The authors reported substantial reliability coefficients which were based on factor loadings rather than on raw scores. On the basis of those factor loadings, correlation coefficients ranged from .58 to .82 for the individual job clusters over the one month period, and from .46 to .99 over the 12 to 18 month period. In a review for the Eighth Mental Measurements Yearbook (1978), Domino noted that findings reported by the authors lacked clarity and was not "the type of report likely to be read by the user of VISA" (pp. 1024-1025).

Considerations in Vocational Interest Measurement

Several considerations exist in respect to the development of a vocational interest inventory for individuals with mental handicaps. First, it is, of course, imperative that a test be accurate, reliable, and valid in the measurement of the vocational interests of the subject. The test must be easy to use by the subject and be efficient to administer by the examiner. The test should be of sufficient length to provide an accurate sample of choice preferences, yet short enough so as not to cause mental fatigue among the examinees which could, in turn, effect the validity of the subject's responses. To prevent bias related to intelligence ranges, the test

should be presented in a reading-free format which incorporates pictorial representations of job choices. The inherent problem in this, however, lies in the fact that the pictures, or sketches, may not accurately convey the appropriate work skills required in the portrayed job setting; particularly if the subject displays weaknesses in visual comprehension, (e.g., visual literacy, visual intelligence, picture reading). Moreover, if a combination of auditory and visual stimuli is used to represent a potential vocational choice, it must be presented with clarity in order to enhance, rather than to confuse, the subject's understanding of the work setting.

The test should present no sex bias. There should be equal numbers of job selections for both males and females, especially in respect to Title IX legislation. Any sex differences portrayed in the pictures should be easily distinguished. A variety of perspectives related to each job setting should likewise be presented. For instance, "farm work" should not be solely depicted by a worker working in a barn. It could be true that a subject may enjoy working on a farm but yet hate to clean barns. The subject must be able to understand the ramifications of what is generally classified as farm work.

Other questions intrinsic to the research must also be explored: (a) Are pictures and language easy to understand? (b) Is the vocabulary relevant to the user? (c) Are job choices appropriate and presented in a workable format? (d) Do pictures give false

representations of reality, (i.e., will a subject select a job based on a pictured portrayal then later become disappointed when realizing that the actual job is different from its pictured portrayal)? (e) Can the test be standardized and is standardization appropriate? (f) Does vocational preference translate into job success, and will it be interpreted by the subject to do so? (g) Will job preference be selected according to a subject's mood? (h) Are portrayals free from cultural, racial, and regional biases? (i) Will validity be reduced in a forced-choice technique if the subject has no preference over two presented job settings? (j) In a visual presentation, will the subject be attracted to the job or the portrayed job setting, and can he/she distinguish the difference? (k) Do the limits of the test present only a limited sphere of occupational possibilities to the subject? (l) Will effective counseling techniques be employed to aid in the interpretation of the scores; and (m) will the test scores be paired with other interest test scores to insure validity? These questions must be asked and satisfactorily answered when considering the effectiveness of a vocational interest measurement for individuals with mental handicaps.

Summary of the Review of the Literature

The following conclusions are supported in the literature:

1. The overall concept of vocational interest is controversial. Vocational interest is largely considered to be an extension of personality and is therefore subject to the dynamics of personal change.
2. Vocational interest measurement is a highly complex process.
3. There are few vocational interest assessments currently available on the market which are suitable for use with individuals diagnosed as having mental handicaps.
4. There is a dearth of related research regarding standardization of interest measurements for use with the population described as mentally handicapped.
5. There is no published research specifically related to the standardization of the Valpar Vocational Interest Screening despite earlier intentions made by the Valpar Corporation.
6. There is a need to design vocational interest inventories to satisfy a variety of requirements in measuring the interest of individuals with mental handicaps.

In summary, there is an obvious need to explore both the reliability and validity of the Valpar Vocational Interest Screening (VIS). In all likelihood, one vocational interest tool, such as the VIS, cannot realistically presume to measure vocational interests for all handicapping conditions within the field of Special Education.

Need for this Study

Vocational interests have long been considered, and perhaps somewhat erroneously, as indicators of probable future vocational success. The logical line of thought is that a person is likely to excel in occupations in which he or she is most interested and that vocational satisfaction is the logical extension of placement within an occupation of high interest. Becker (1969) reported that various studies concerned with the vocational adjustment of individuals with educable mental retardation have pointed out that work interests, habits, and motivation are far more critical variables than specific job capacities and skills. McRae (1959) indicated that a high degree of job satisfaction was reported among individuals who were working in jobs compatible with earlier measured high interests.

Super (1957) reported in his theory of vocational development that a person's vocational choice changes according to his/her stage of growth. In what Super calls the Growth Stage (Birth to 14 years), a person's vocational orientation changes at least four times: from birth to three years of age, there is no interest or concern in vocation or vocational choice; during the fantasy substage (ages 4 to 10), fantasy is the basis of vocational thinking. In the interest substage (ages 11-12), vocational thought is based on the individual's likes and dislikes. Finally, in the capacity substage

(ages 13-14), individual ability becomes the basis for vocational thinking. Super (1957) described other ensuing changes in vocational interests as they were based on needs, interests, capacities, values, and opportunities. Super observed that reality ultimately becomes the determining factor in pursuing a vocation. One could safely peruse any of these theories within the field of special education.

In the absence of a choice of appropriate vocational interest inventories for individuals with handicaps, several researchers have developed specialized tools to aid in the assessment of vocational interests. There are, however, very few of these instruments on the educational market. Buros (1978) reported only three such tests designated for exclusive use with special populations: two for individuals labeled educable mentally handicapped and one for individuals who are deaf. Buros listed several other tests, however, that could perhaps be adapted for use with individuals with handicaps, particularly those instruments which require only limited reading skills. Normative data, of course, might not be adaptable for use with these special individuals.

The Texas Education Agency (1980) annotated a list of interest measurements that could be useful for vocational assessment of students with handicaps. Among the 37 citations, only a brief few may be useful for the individuals labeled mentally handicapped. Those judged as inappropriate for use were based upon the following

criteria: (a) They required reading skills too sophisticated for use by individuals having mental handicaps. (b) They portrayed jobs areas and levels for which individuals with mental handicaps cannot easily aspire. (c) They were not suitable for use as assessment devices on individuals having mental handicaps.

The Valpar Corporation designed the Valpar Pre-Vocational Readiness Battery - Valpar Component Work Sample 17 in an effort to assist in the vocational development of individuals with handicaps. Valpar 17 is a comprehensive evaluation battery that ". . . doubles as a training program for mentally retarded persons [sic]" (p. 5). It was designed ". . . to accommodate a wide range of abilities from the 'trainably' retarded [sic] to those persons with specific learning disabilities" (p. 5). After first assessing the evaluatee's most efficient mode of understanding instructions, it purports to provide comprehensive evaluation on three levels of measurement:

Level I is the simplest, assessing the evaluatee's knowledge of basic concepts. Level II is more difficult, assessing knowledge in the areas of both concept and function. Level III is the most difficult, designed for those evaluatees who excel at the other two levels and are capable of preparing for independent living or competitive employment (p. 5).

The Pre-Vocational Readiness Battery consists of five subtests:

1. Developmental Assessment
2. Workshop Evaluation
3. Vocational Interest Screening
4. Interpersonal/Social Skills
5. Independent Living Skills

For the purposes of this study the Vocational Interest Screening was examined (Appendix A).

As of its 1978 publication, the Valpar Corporation indicated in its accompanying Norm Manual (Appendix B) that "extensive field testing" (p. 1) was being conducted from field test sites in Arizona. Ten norm groups were listed including those from Independent Living locals, Jr./Sr. High School Special Needs, Rehabilitation Workshops, Special Learning Disabilities groups, Sheltered Workshops/Activity Centers, Institutionalized (working and non-working groups), and others. The Norm Manual also stated that the "Valpar Corporation is now in the process of completing the regular norms at facilities and schools across the country in eight regional areas" (p. 1). The regional areas were listed as the Northeast, Southeast, Midwest, North Central, South Central, Southwest, Rocky Mountains, and Northwest. The manual went on to suggest that "the new norms [would] replace the research norms", and that they would be forwarded to the purchaser "at no charge as they become available" (p. 1). As of June, 1985, however, no new norms had been published.

The purpose of this study was to determine a set of test-retest reliability coefficients on the Valpar Pre-Vocational Readiness Battery, Component 17, Subtest 3, Vocational Interest Screening for both male and female students receiving secondary special education services. In respect to the above consideration, a hypothesis was formulated. Stated in null form, the hypothesis was: The Valpar Vocational Interest Screening is not a reliable measurement of interest within an undesignated special education population.

Method

Permission to use the Valpar Vocational Interest Screening was first acquired from the Illinois Department of Rehabilitation Services, a local purchaser of the Valpar Pre-vocational Readiness Battery (Appendix C). Initial training was given to this researcher by the Department of Rehabilitation Services regarding the correct methods and procedures in using the Vocational Interest Screening.

Subjects

The sample was drawn from two cross-categorical cooperative work training special education classrooms at a rural high school in central Illinois. Twenty-five subjects who were diagnosed as having learning disabilities, mental retardation, or social-economic educational handicaps and who were enrolled in the

cooperative work training program were obtained for research in two group settings. There were 16 males and 9 females in the sample. The chronological ages ranged from 15 to 19 years with an overall mean age of 17 years, 1 month. All of the subjects were receiving some type of special education service at the school, and approximately 60% of the group was employed on a part-time work-study basis. Although no effort was made to stratify the sample with respect to IQ or degree of educational handicap, qualification for this type of special education program suggested suitable applicability of the Valpar Vocational Interest Screening.

Apparatus

The Valpar Pre-Vocational Readiness Battery, Component 17, Subtest 3, Vocational Interest Screening was the instrument used for testing. The VIS is a slide/cassette tape presentation portraying 18 various work settings in six specific job clusters listed in the Dictionary of Occupational Titles. The six job clusters, each with three specific work settings, are listed as follows: (a) Social Service: Police Officer, Library Assistant, Teacher Assistant; (b) Sales: Cafeteria Cashier, Cashier/Checker, Automobile Salesperson; (c) Machine Operation: Sewing Machine Operator, Janitor, Shipping Clerk; (d) Office Work/Clerical: Receptionist, Gas Meter Reader, Stock Clerk; (e) Physical Sciences: Carpenter Helper, Assembler, Bricklayer Helper; and

(f) Outdoor: Irrigator, Farmworker, Nursery Laborer.

The Vocational Interest Screening presents work settings in an audiovisual format. It is a forced-choice interest screening of 90 slides in which the subject views each color slide photograph depicting two work settings. A brief three sentence description of each setting is heard. The subject is then asked to choose the setting that he/she is most interested in by marking it on the response form. As suggested in the Valpar Vocational Interest Screening Manual, the job titles are not meant to represent all the work settings pictured in the subtest, but instead, provide the examiner with a small sampling of the subject's interests. The ultimate outcome of the test is to rank the subject's preferred order of interest of the six occupational clusters. The total screening takes approximately 45 minutes to complete which includes one short break. A carousel projector, projection screen, and cassette tape player are needed to present the test.

Procedure

The Vocational Interest Screening was administered in two separate stages over a period of thirty days. Stage One was considered the initial "test" in the reliability study and was given to the 26 students who attended the two special education cooperative work training classes on test day. Stage Two was a "retest" given thirty days later under identical conditions. The retest was given to 28 students who attended classes on that day.

Each testing session lasted one school class period (55 minutes) with two sessions given per day to accommodate the two groups of students. At the beginning of each session, the subjects were asked to identify themselves by writing their first name and last initial on the response form. The subjects were then asked to indicate their career preference by writing it on the back of the test response form. Following this, the Vocational Interest Screening was given according to the manner prescribed in the manual.

For the sake of feasibility, one modification was made in the response form. Instead of using the Valpar VIS Answer Booklet, subjects were asked to respond on the modified response forms (Appendix D) which were prepared by the examiner. Upon viewing the two job settings portrayed in each slide, the examinees were asked to indicate their preference by circling either L [for left job setting] or R [for right job setting].

At the conclusion of the study, 25 test-retest response forms were compared, and recorded on 2 x k contingency tables (Appendix E) for agreement vs. non-agreement over the study period. (Three additional subject response forms were discarded as each was without antecedent from the initial testing session.)

Reliability

In 12% of the observations, an independent observer was employed to provide a reliability check of the

frequency of agreements vs. non-agreements recorded on randomly selected contingency tables. Using the formula, $\text{Reliability} = \text{Agreements} / (\text{Agreements} + \text{Disagreements}) \times 100$, a reliability estimate of 100% was obtained.

Statistical Procedure

Test-retest reliability of the VIS was obtained by using a weighted kappa statistic espoused by Cohen (1968). This procedure yields a chance corrected product-moment correlation by comparing the proportion of actual observed agreements between tests to those expected by chance. Raw frequency scores of agreements vs. non-agreements were then taken from the contingency tables and computed using the weighted kappa formula. The resulting kappa coefficient yielded individual subject reliability as well as an internal reliability correlation for the entire sample. A third measurement was obtained through the comparison of the male vs. female subsamples.

Results

Test-retest reliability of the Vocational Interest Screening was obtained from the subjects who were both tested then retested over the 30 day interval. Reliability coefficients were computed using the weighted kappa formula which yielded a chance corrected product-moment correlation.

As reported in Table 1, the male population indicated the highest degree of interest in the Outdoor and Physical

Science job clusters. The least interest was shown in Office/Clerical and Social Service areas. Both the average numbers of responses and the overall percentage change per job cluster are reported as well.

Insert Table 1 about here

The female population indicated the greatest interest in Office/Clerical and Social Service job clusters. The least interest was shown in Machine and Physical Science areas (see Table 2). The average numbers of responses over the course of testing and the overall percentage change in responses per job cluster are also reported.

Insert Table 2 about here

The correlation coefficients for the entire sample ($N = 25$) ranged from .22 to .90 with an overall kappa of .61 (see Table 3). Though there was a wide degree of scatter, the correlations fell mainly in the .60s and .70s. Retest coefficients for the male subsample ($N = 16$) ranged from .22 to .90 (kappa = .60) while coefficients for female subsamples ($N = 9$) ranged from .44 to .82 (kappa = .61). Correlations fell mainly in the .60s and .70s for the male group and in the .50s and .60s for the female group.

Table 1
Rank Order of Responses per Job Cluster - Males

Job Cluster	Test	Retest	% Change	Average
1. Outdoor	302	309	+ 2	305.5
2. Physical Science	312	261	-16	286.5
3. Sales	235	271	+16	253
4. Machine	243	250	+ 3	246.5
5. Office/Clerical	180	198	+10	189
6. Social Services	161	143	-11	152

Note. % Change reflects the change in the total number of responses over the 30 day interval.

Table 2

Rank Order of Responses per Job Cluster - Females

Job Cluster	Test	Retest	% Change	Average
1. Social Services	164	176	+ 7	170
2. Office/Clerical	161	151	- 6	156
3. Sales	124	144	+16	134
4. Outdoor	134	125	- 7	129.5
5. Machine	116	119	+ 3	117.5
6. Physical Science	111	95	-14	103

Note. % Change reflects the change in the total number of responses over the 30 day interval.

TABLE 3

One Month Test-Retest CorrelationsMales and Females (N = 25)

Subject	^a Females ($n = 9$)	^b Males ($n = 16$)
1.	.44	
2.	.45	
3.	.57	
4.	.59	
5.	.60	
6.	.62	
7.	.62	
8.	.75	
9.	.82	
10.		.22
11.		.26
12.		.35
13.		.41
14.		.47
15.		.47
16.		.53
17.		.65
18.		.68
19.		.69
20.		.71
21.		.73
22.		.77
23.		.79
24.		.88
25.		.90

Note. Overall Kappa = .61^aKappa (Males) = .68^bKappa (Females) = .61

Insert Table 3 about here

The .05 level of probability was utilized in the hypothesis testing. The Test of Significance for a Correlation Coefficient was employed to measure the value of t against the null hypothesis. Though only moderate, the correlation coefficient for the entire sample proved significant ($t = 3.79$, $df = 23$, $p < .05$). When broken down into subsamples, t proved likewise significant in both the male population ($t = 2.83$, $df = 14$, $p < .05$) and in the female population ($t = 2.86$, $df = 7$, $p < .05$).

Discussion

Although moderate, there appears to be support for the hypothesis that the Valpar Pre-Vocational Readiness Battery (Component 17) - Vocational Interest Screening is a reliable instrument of measurement within an undesignated special education population. The null hypothesis was rejected.

Using Cohen's weighted kappa statistic, 11 of the 25 possible test-retest correlations fell below an r value of .6. The remaining 14 correlations were found to be at .6 or above. The kappa correlation for the male group was .6 while the kappa for females was .61. The overall kappa for the total group was .61. Using the Test of Significance for a Correlation Coefficient, the overall kappa was found to be significant at the .05 level.

As a result, the present data suggest that the Valpar Vocational Interest Screening appears to be moderately reliable at best. One would find it difficult to infer that the VIS would be a suitable instrument of measurement for all special populations as purported by the Valpar Corporation. Additional testing would be recommended, particularly on individuals labeled educable and trainable mentally handicapped.

Characteristically, children labeled mildly or moderately mentally handicapped show deficiencies in attention and in ability to discriminate (Zeaman and House, 1963). In relation to the present study, individuals from these populations may not be able to generalize the portrayed job settings to real life work situations. A question might arise as to the appropriateness of the VIS's portrayal of a scuba diver swimming in a tropical setting being used to represent a typical outdoor work setting. How realistic would it be for an individual who is labeled mentally handicapped to become a professional scuba diver? Would it not be more appropriate to present more realistic outdoor work settings such as highway construction, painting, or gardening to represent outdoor type work? Questions like these must be raised to investigate further the validity of the test.

Several factors may have influenced the results of this study. First, although the majority of the correlation coefficients were above .6, it should be

emphasised that only 3 of the 25 (or 12%) of the scores indicated truly high correlations ($r > .8$). Eleven of the 25 scores (44%) fell below the .6 minimum level of acceptance. The remaining 11 scores, or another 44%, fell within the moderately acceptable range.

Given the range of educational handicaps within the sample population, it would be likely that the high-positive correlations were found among the older subjects with less severe handicaps or disabilities. One might venture to add that the low-positive correlations ($r < .3$) could have been generated by either the subjects with more severe mental handicaps or else the younger, more unstable adolescents of the study. This should be further explored as the implications may prove the VIS less reliable with individuals having more severe handicaps.

Several of the subjects indicated a dislike of the Vocational Interest Screening. In a follow-up critique of the test, 12% of the subjects indicated that they enjoyed the test, while 44% expressed a dislike. An additional 44% did not comment. Approximately 28% of the subjects indicated that the idea behind this test was good but that there were too few choices to which they could respond. Approximately 52% of the entire group commented that the range of job selections was far too narrow. Approximately 24% of the subjects indicated that the test was boring. One subject indicated that he did not like the examiner.

Given these indications, it is reasonable to assume

that at least a small proportion of the subjects did not take the test seriously and subsequently did not attempt to perform well. Moreover, it is possible that students involved in this study may have been prone to some form of test anxiety which could have, in turn, contributed to poor attitudes toward their participation in this study. Perhaps the lower correlations reflect a negative attitude toward test taking in general.

Several other considerations should be also be explored. First, two groups of subjects were tested on each of the two given test days. One group ($N = 13$) was tested just before lunch while the second group ($N = 12$) was tested immediately following lunch. The overall correlation of Group 1 was .53, while the overall correlation of Group 2 was .69. Possibly the lunch break was a factor which influenced the results of the study.

Secondly, if one adheres to Super's theories of vocational development (1957), the adolescents involved in this study may not yet have entered into one or more of the more mature stages of vocational preference which would thus cause a less stabilized pattern of vocational choice. Though only theory, the possibility exists that relative age of the subjects or the vacillation of their moods may have affected the outcome of the study.

Finally, it should be mentioned that the low and moderate positive correlations might simply reflect the forced choice format of the test. Selection of an item in a forced choice technique not only enhances the score for

one particular interest area but also automatically depresses scores in other areas. As a result, an adolescent who is merely exploring vocational possibilities may have a tendency to choose only whatever picture interests him/her at that given time. Should this be the case, the test might not reflect a reliable estimate of vocational preference. The results would be spurious at best.

Apart from the above general arguments, there has been a great need to develop instruments of this type to assist exceptional individuals in making vocational choices. The Valpar Corporation has made an attempt to fill this need. Although limited in scope, the VIS is both easy to administer and score, and can be potentially useful in the identification basic of vocational interests. At its very worst, the VIS could still be useful as a counseling tool to help individuals explore future vocational possibilities. As with any test of this type, however, the scores alone only open the door to vocational exploration. The accompanying counseling technique used as a follow-up to this inventory would be most critical in accurately identifying the strongest vocational preference. Moreover, the vocational counselor would be more likely to know of local or regional job selections which the subject or client could likewise explore.

As vocational interest measurement for the special populations is still in its embryonic stages, the future

holds no limit as to the possibilities or usefulness of tools of this type. In a sense, the the Vocational Interest Screening is one of a select group of tests forging the frontier for individuals with exceptionalities. As tests like the VIS are developed and refined, a more specialized consideration can be given to the successful vocational training and placement of individuals having handicaps. New jobs and career opportunities may be untapped, thus broadening the horizons for a group of individuals who have otherwise been ignored as a potentially viable and productive work force. Perhaps, a second industrial revolution may even occur. The possibilities are limitless. It is only through the development of tools such as the VIS that this dream may be realized.

In summary, this study should provide a basis for further research of the Valpar Vocational Interest Screening. Beside further investigations of reliability in the specific stratifications of mental impairment (e.g., EMH and TMH populations), there still remains the need to establish both content and predictive validity of the instrument. Moreover, future research should examine clients' inventoried interests and match those with follow-ups of actual job entry. Information of this nature would help further establish the credibility of the Valpar Vocational Interest Screening.

References

- Becker, R. L. (1973a). Vocational choice: An inventory approach. Education and Training of the Mentally Retarded, 8, 128-136.
- Becker, R. L. (1973b). The Reading-Free Vocational Interest Inventory: Measurement of job preference in the EMR. Mental Retardation, 11(4), 11-15.
- Becker, R. L., & Ferguson, R. E. (1969a). Assessing educable retardates' vocational interest through non-reading technique. Mental Retardation, 7(5), 20-25.
- Becker, R. L., & Ferguson, R. E. (1969b). A vocational picture interest inventory for educable retarded youth. Exceptional Children, 35, 562-563.
- Berdie, R. F. (1955). Validities of the Strong Vocational Interest Blank. In W. L. Layton (Ed.), The Strong Vocational Interest Blank: Research and uses (pp. 18-61). Minneapolis: University of Minnesota Press.
- Berdine, W. H., & Cegelka, P. T. (1980). Teaching the trainable retarded. Columbus: Charles E. Merrill.
- Blake, R., & Fabry, J. (1979). Reliability of the Strong-Campbell Interest Inventory with high school seniors. Measurement and Evaluation in Guidance, 12(1), 19-24.
- Brown, D. (1970). Students' vocational choices: A review and critique. Guidance Monograph Series: Series IV. Career Information and Development. New York: Houghton Mifflin.
- Buros, O. K. (Ed.). (1978). The eighth mental measurements yearbook (Vol. 2). Hiland Park, NJ: Gryphon Press.

- Campbell, D. P. (1969, April). Some desirable characteristics of interest inventories. Paper presented at the American Personnel and Guidance Association Convention, Las Vegas, NV. (ERIC Document Reproduction Service No. ED 033 417).
- Cohen, J. (1968). Weighted kappa: Nominal scale agreement with provision for scaled disagreement or partial credit. Psychological Bulletin, 70, 213-20.
- Cole, N. S., & Hanson, G. R. (1975). Impact of interest inventories on career choice. In E. E. Diamond (Ed.), Issues of sex bias and sex fairness in career interest measurement (Contract No. DEC-0-72-5240, pp. 1-17). Washington, DC: National Institute of Education.
- Darley, J. G. (1941). Clinical aspects and interpretation of the Strong Vocational Interest Blank. New York: Psychological Corporation.
- Darley, J. G., & Hagenah, T. (1955). Vocational Interest Measurement. Minneapolis: University of Minnesota Press.
- Datta, L. E. (1975). Foreward. In E. E. Diamond (Ed.), Issues of sex bias and sex fairness in career interest measurement (Contract No. DEC-0-72-5240, p. vii). Washington, DC: National Institute of Education.
- Domino, G. (1978). Review of Vocational Interest and Sophistication Assessment. In O. K. Buros (Ed.), The eighth mental measurements yearbook: Vol. 2. Tests & reviews: Vocations - careers and interests (pp. 1632-1633). Highland Park, NJ: Gryphon Press.

- Hanson, G. R. (1974). Assessing the career interests of college youth: Summary of research and applications (Report No. 64). Iowa City: ACT Publications.
- Holland, J. L. (1973). Making Vocational Choices: A theory of careers. Englewood Cliffs, NJ: Prentice-Hall.
- Kapes, J. T., & Greenwood, K. L. (1979). Walking the tightrope of student selection. Voc Ed Journal, 54(7), 24-27.
- Kapes, J. T., & Parrish, L. H. (1983). Career guidance and assessment tools for handicapped persons. In R. C. Rodgers (Ed.), Measurement trends in career and vocational education, New Directions for Testing and Measurement, 20. 47-61.
- Krantz, G. (1979). Vocational evaluation in the public schools. In W. Pruitt (Ed.), Readings in work evaluation I. Menomonie: University of Wisconsin-Stout.
- Kroll, A. M., Dinklage, L. B., Lee, J., Morley, E. D., & Wilson, E. H. (1970). Career development: Growth and crisis. New York: John Wiley.
- McRae, G. G. (1959). The relationship of job satisfaction and earlier measured interests. Dissertations Abstracts International, 24, 63.
- Nadolski, J. M. (1981). Vocational education in public schools: Implications for future practice. Journal for Vocational Special Needs Education, 3, 5-9.
- Office of Civil Rights, U. S. Department of Health, Education, and Welfare. (1979). Vocational education programs guidelines for eliminating discrimination and denial of services on the basis of race, color, national origin, sex

and handicap (17162-17175). Federal Register, 44(56).

Washington, DC: U.S. Government Printing Office.

Parnicky, J. J., Kahn, H., & Burdett, A. B. (1965).

Preliminary efforts at determining the significance of retardates' vocational interests. American Journal of Mental Deficiency, 70, 393-398.

Parnicky, J. J., Kahn, H., & Burdett, A. B. (1971).

Standardization of the (VISA) Vocational Interest and Sophistication Assessment technique. American Journal of Mental Deficiency, 75, 442-448.

Public Law 93-112: The Vocational Rehabilitation Act, 1973.

Public Law 94-142: The Education of All Handicapped Children Act, 1975.

Public Law 94-482: Title II of the Education Amendments, 1976.

Super, D. E. (1949). Appraising vocational fitness. New York: Harper.

Super, D. E., & Roser, H. P. (1955) Some correlates of interest maturity in early adolescence. In W. L. Layton (Ed.), The Strong Vocational Interest Blank: Research and uses (pp. 76-92). Minneapolis: University of Minnesota Press.

Texas Education Agency. (1980). Guidelines for vocational assessment of the handicapped. Austin: Texas Education Agency.

U.S. Department of Labor. (1977). Dictionary of occupational titles (4th ed.). (No. 029-013-~~00079~~-9). Washington, DC: U.S. Government Printing Office.

World Book Encyclopedia. (1988). Names (Vol. 14, pp. 6-7).

Chicago: Childcraft International.

Zaccaria, J. S. (1970). Theories of occupational choice and vocational development. Guidance Monograph Series: Series IV. Career Information and Development. Boston: Houghton Mifflin.

Zeaman, D., & House, B. J. (1963). The role of attention in discrimination learning. In N. R. Ellis (Ed.), Handbook of mental deficiency. New York: McGraw-Hill.

Appendix A

Valpar Pre-Vocational Readiness Battery

Component # 17 - Subtest 3

Vocational Interest Screening

SUBTEST THREE: VOCATIONAL INTEREST SCREENING

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

DESCRIPTION

PURPOSE

INSTRUCTIONS TO THE EVALUEE

SCORING

Subtest Three, Vocational Interest Screening, is a slide/tape presentation of various work settings.

The inventory consists of:

- 1 - Tray of slides
- 1 - Set of evaluatee answer booklets
- 1 - Pad of job profile sheets
- 1 - Cassette tape
- 1 - Storage container for slides and tape
- 1 - Subtest Manual

Purpose

This subtest presents work settings in an audiovisual format. It is a forced-choice interest screening in which the evaluatee views a color slide photograph depicting two work settings. A brief three sentence description of each setting is heard. The evaluatee then chooses the setting he/she has the most interest in.

The slides represent six job areas. These are:

1. Social Service
2. Sales
3. Machine Operation
4. Office Work/Clerical
5. Physical Sciences
6. Outdoor

A sampling of jobs from the Dictionary of Occupational Titles that are represented in the six job areas are:

Social Service: 375.263-914, Police Officer I; 249.367-046, Library Assistant; 249.367-074, Teacher Assistant.

Sales: 211.462-010, Cafeteria Cashier; 211.462-014, Cashier/Checker; 273.353-010, Automobile Salesperson..

Machine Operation: 787.682-046, Sewing Machine Operator; 382.664-101, Janitor; 222.387-050, Shipping Clerk.

Office Work/Clerical: 237.367-038, Receptionist; 209.567-010, Gas Meter Reader; 299.367-014, Stock Clerk.

Physical Sciences: 869.664-014, Carpenter Helper; 706.361-010, Assembler; 869.687-026, Bricklayer Helper.

Outdoor: 409.687-014, Irrigator; 410.664-010, Farmworker; 405.687-014, Nursery Laborer.

These job titles are not meant to represent all the work settings pictured in this subtest, but rather, to provide you with a small sampling.

The ultimate outcome of this subtest will be the evaluatee's preferred order of six occupational areas.

Instructions to the Evaluee

NOTE: This subtest can be administered in a group or one-to-one setting.

Prior to administration, you will need to set up a carousel slide projector and cassette recorder.

SAY: In this exercise, you will be shown colored pictures of places to work.

Each picture shows two work settings. You will hear a short talk about each work setting.

In front of you is an answer booklet. The pictures in it match the pictures you will see. When you have seen both work settings and heard both descriptions, you will put an X over the picture of the work setting you like the best.

There will be 90 pictures to look at. You will look at half of them now. You will then take a short break.

Now, let's look at the first picture. We will also hear both work setting descriptions.

NOTE: Show the first slide and play the tape. When both work setting descriptions have been heard, stop the tape and give the evaluee time to answer. You will notice that the tape effectively repeats the instructions and gives the evaluee an opportunity to ask questions if there is any confusion. When the evaluee has answered, start the slide/tape again. It will automatically pause after each description. After the first 45 slides (the slide/tape will indicate this), stop the tape and have the evaluee(s) take a five minute break. After the break,

SAY: You will now look at the last half of the pictures. Do just as you did before. Listen to both work setting descriptions. Then mark an X over the work setting you like best. Ready, begin.

SCORING

Vocational Interest Screening gives you the evaluatee's interest, in six job categories, in preferred order. It also gives you a validity score (.1 - .9) for the evaluatee's answers.

To determine the preferred order of job categories,

1. Place the NCR Job Profile Sheet behind the first page of the evaluatee's answer booklet.
2. Mark an X only in the boxes which correspond to the evaluatee's choice of work settings (the Job Profile Sheet is printed on NCR paper and will transfer your X to the paper behind it). If the evaluatee has marked more than one choice for each pair, do not put an X in either box.
3. Continue through each page of the evaluatee's answer booklet. Make sure the NCR paper has "top Pages 1-11" in the upper left-hand corner for the first 11 pages. Then turn it around so "top Pages 12-23" is in the upper left-hand corner for page 12 on.
4. When each evaluatee choice is marked for each page of the answer booklet, remove the NCR Job Profile Sheet.
5. You will record the evaluatee's scores for Vocational Interest Screening on the Individual Exit Profile.
6. Count the total number of checks in each job category.
7. Circle that number on the "Interest Scale" for each job category.

To compute the validation scales:

1. Count the total number of items answered on the NCR Job Profile sheet. This can be done by adding the totals from each interest column together. Circle the corresponding number under "No. of Items Answered."
2. Count the number of validation boxes that have two checks in them. Circle the corresponding number on the "No. of Validation Boxes" scale.
3. To compute the consistency of answers,
 - A. Take the total number of validation boxes with two checks in them, and multiply that number by two.
 - B. Count the total number of checks inside all boxes on the NCR Job Profile Sheet.
 - C. Now divide the "No. of Validation Boxes" (see 3.A above) by the total number of checks inside all boxes on the NCR Job Profile Sheet. (Maximum checks possible is 30.) Circle the corresponding number under "Consistency of Answers."

For example:

Evaluatee X had the following total
 number of checks in each job category.

machine	- 10	= average
outdoor	- 25	= high
sales	- 18	= average
social service	- 23	= above average
office/clerical	- 15	= average
physical science	- 20	= high

Evaluee X answered all 90 items.

**Evaluate X had two checks in 12 of
the 15 validation boxes.**

Evaluate X's consistency of answers is:

12 validation boxes x 2 = 24

24 ÷ .30 = a .8 consistency of answers.

Plotting this on the scale means
Evaluee's X's interest scores are valid.

See norm groups under VCWS #17,
Vocational Interest Screening, for
interpretation.

INTEREST SCALES			VALIDATION SCALES		
LOW	BELOW AVE	AVERAGE	ABOVE AVE	HIGH	
MACHINE					
OUTDOOR					
SALES					
SOCIAL SERVICES					
OFFICE CLERICAL					
PHYSICAL SCIENCE					
No. of Items Answered					
No. of Validation Boxes					
Consistency of Answers					

Appendix B

Valpar Pre-Vocational Readiness Battery

Component # 17 - Norm Manual

VALPAR PRE-VOCATIONAL READINESS BATTERY
(VCWS 17)

RESEARCH NORMS

Introduction

Enclosed in this package are the research norms for the Pre-Vocational Readiness Battery, VCWS 17. This battery has been under development for the past three years, with extensive field testing and revision occurring during the past year. These research norms have been collected from field test sites in Arizona which have clients or students representative of all the norm groups. These norm groups are:

- . Independent Living
- . Competitive Employment
- . Special Learning Disabilities
- . Jr./Sr. High School Special Needs
- . Rehabilitation Workshop
- . Sheltered Workshop
- . Activity Center
- . Homebound Employment
- . Institutionalized - Institutional Work
- . Institutionalized - Non Working

These research norms will provide you with a means by which to convert your evaluatee's raw scores into percentile rankings. You can then compare your evaluatee's performance to other norm groups to determine the feasibility or training needed for upward movement through the norming continuum. The norming groups listed above are represented on the research norm tables by three bell curves.

Valpar Corporation is now in the process of completing the regular norms at facilities and schools across the country in eight regional areas. These regional areas are:

1. Northeast
2. Southeast
3. Mid West
4. North Central
5. South Central
6. Southwest
7. Rocky Mountains
8. Northwest

There will be ten norming sites in each of the above regions. As in the norming of our other work samples, 1-16, these new norms will be sent directly to you at no charge, as they become available. ~~The new norms will replace these research norms.~~ Also, as in the case of all other Valpar work samples, we plan a continuous norming program over the next five years. Through this norming process there is a possibility of minor material changes in the battery. If this does occur, previous purchasers of PVRB will automatically receive updated materials at no charge. If any material changes should become necessary, these changes will receive adequate field testing prior to their release. We do not anticipate any changes to modify the initial intent of the assessment battery.

We are also currently collecting data for a Clinical Handbook which will accompany the PVRB. This Handbook will assist you in diagnosing causes of behavior your evaluatee might display during the administration of this Battery. We anticipate the Clinical Handbook being available at the close of the first standardized norming year.

HOW TO USE THE RESEARCH NORM TABLES

Although the norm tables may appear to be complicated, we assure you that they are not. If you follow the steps below, you should have no problems converting your evaluatee's raw score into a percentile ranking.

1. Locate the correct norm table.

For example, if you have just scored Exercises 1-4 of Money Handling (Part B of Independent Living Skills, Subtest Five), you would turn to the Money Handling norm table. (See next page for example.)

2. Take the raw score and find that number on the correct numbered scale for that exercise(s) or part.

For example, if the evaluatee scored 42 TOTAL points in Exercise 1-4 of Money Handling, you would locate 42 on the numbered scale which corresponds to Exercise 1-4 - Total.

3. Move your finger up to the scale marked PERCENTILE, which is directly under the bell curves. This is your evaluatee's percentile score.

For example, 42 on the numbered scale for Money Handling Exercise 1-4 - Total, if you move your finger in a direct line UP to the PERCENTILE scale, you would find a 42 raw score converts to a 64th percentile ranking.

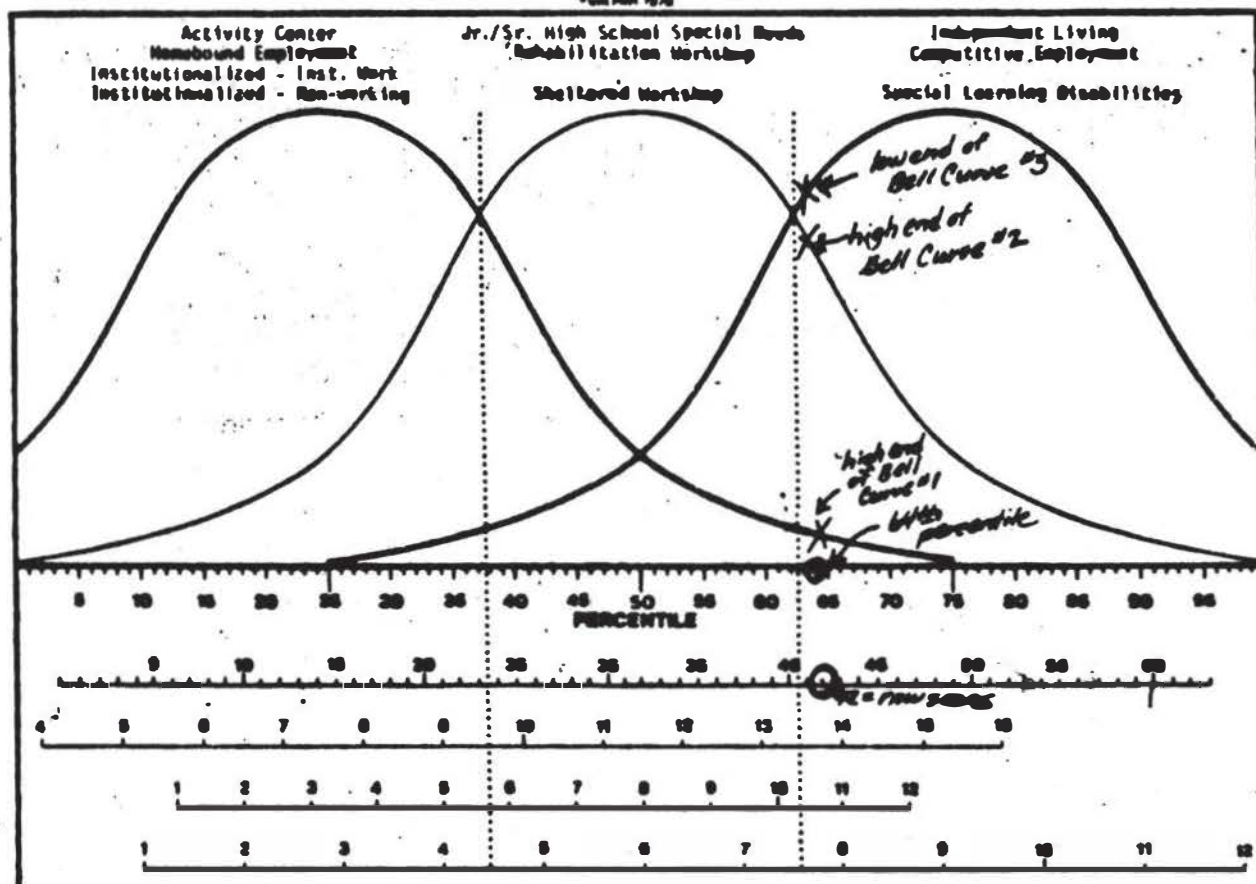
4. To compare your evaluatee's percentile ranking to other norm groups; look at where his or her percentile score falls on the bell curves.

Bell Curve One: For example, a 64th percentile ranking in Money Handling, Exercises 1-4, is at the very high end of the "Activity Center, Homebound Employment, and Institutionalized" bell curve. If your evaluatee is currently in one of those norm groups, he or she is functioning extremely high in Money Handling and could well move into advanced training.

Bell Curve Two: This same percentile score of 64 is located slightly above the mean of the bell curve which has "Jr./Sr. High School-Special Needs, Rehabilitation Workshop, and Sheltered Workshop" as its norm groups. Your evaluatee, if currently in one of these groups, is still functioning high.

Bell Curve Three: A percentile score of 64 for the last bell curve, representing independent living, competitive employment and special learning disabilities norm groups, would place your evaluatee below the mean. This means he or she would need training in Money Handling in order to meet the expectations of these norm groups.

**Pre-Vocational Readiness Battery
VALPAR 17**
Tests Form 1070



Independent Living Skills
Money Handling

You might note that, as in the case of the Money Handling Booklets one and two, not all norming tables represent the entire percentile groups (i.e. Money Handling Booklet One stops at the 79th percentile.) ~~This same statistical phenomena is also present in other norming tables.~~ This is because a particular exercise or task is designed for the lower functioning groups and, therefore, even if an evaluatee is able to score all of the points possible, this would not be up to the expected functioning level of a person in the highest norm group. If this occurs, you should evaluate at the next highest level or note that the evaluatee was at the highest percentile for that exercise or task.

NOTE: The norm table for Vocational Interest Screening, Subtest 3, is presented after all other norms. See page 14.

SUBTEST THREE: VOCATIONAL INTEREST SCREENING**HOW TO USE THE INTEREST AND VALIDATION SCALES****Interest Scale**

1. Count the total number of checks in each job category.
2. Refer to the interest scale on the next page.
Find the number in each job category that corresponds to your total number of checks.
3. Circle this number on the Individual Exit Profile.
(A reduction of the Vocational Interest Screening Validation Scale is on the right-hand side of the IEP.)
This gives you a visual display of each job category's interest scale (i.e. either high, above average, average, etc.)

To compute the validation scales:

1. Count the total number of items answered on the NCR Job Profile sheet. This can be done by adding the totals from each interest column together. Circle the corresponding number under "No. of Items Answered."
2. Count the number of validation boxes that have two checks in them. Circle the corresponding number on the "No. of Validation Boxes" scale.
3. To compute the consistency of answers,
 - A. Take the total number of validation boxes with two checks in them, and multiply that number by two.
 - B. Count the total number of checks inside all boxes on the NCR Job Profile Sheet.
 - C. Now divide the "No. of Validation Boxes" (see 3.A above) by the total number of checks inside all boxes on the NCR Job Profile Sheet. (Maximum checks possible is 30.) Circle the corresponding number under "Consistency of Answers."

For example:

Evaluee X had the following total number of checks in each job category.

machine	- 10 = average
outdoor	- 25 = high
sales	- 18 = average
social service	- 23 = above average
office/clerical	- 15 = average
physical science	- 20 = high

Evaluee X answered all 90 items.

Evaluee X had two checks in 12 of the 15 validation boxes.

Evaluee X's consistency of answers is:

$$12 \text{ validation boxes} \times 2 = 24$$

$$24 \div 30 = \text{a } .8 \text{ consistency of answers.}$$

Plotting this on the scale means Evaluee's X's interest scores are valid.

See norm groups under VCWS #17, Vocational Interest Screening, for interpretation.

INTEREST SCALES						VALIDATION SCALES		
	MACHINE	OUTDOOR	SALES	SOCIAL SERVICES	OFFICE CLERICAL	PHYSICAL SCIENCE	No. of Items Answered	No. of Validation Boxes
HIGH								
ABOVE AVE								
AVERAGE								
BELOW AVE								
LOW								

Appendix C
Correspondence with the Illinois Department of
Rehabilitation Services

DEPARTMENT OF SPECIAL EDUCATION
EASTERN ILLINOIS UNIVERSITY
FALL 1982

TO: Graduate Thesis Committee: Brulle, Barnhart, McIntyre, Eastern Illinois University
Administrative Staff - Eastern Illinois Area of Special Education (EIASE): Grewell, Biggs, Christman
Administrative Staff - Cumberland Unit District #77: Holmes, Ciaccio, Smith
Mr. David Selby, Vocational Diagnostician, Eastern Illinois Area of Special Education
Ms. Sandra Johnson, Vocational Coordinator, Cumberland Unit District #77
Illinois Department of Rehabilitation Services office, Mattoon, Illinois

RE: Usage of the Vocational Interest Screening (VIS) subtest of the Valpar Prevocational Readiness Battery, Component #17, for a two-hour graduate research study at Cumberland High School on October 27, 1982 and November 17, 1982 (dates negotiable). Request for research.

From: Roger Anderson, candidate for graduate degree in Special Education, Eastern Illinois University

Date: October 18, 1982

The purpose of this abstract is two-fold: 1) to explain the purpose and focus of a graduate research study designed to measure test-retest reliability within the Vocational Interest Screening subtest of the Valpar Prevocational Readiness Battery # 17, and to 2) seek permission in using the subtest hardware in a strict research setting at Cumberland High School. Essentially, this study requires the use of the slide/tape presentation of the VPRB-VIS subtest for one hour sessions on each of two days: October 27, 1982, 10:20 - 11:10 AM, and November 17, 1982, same. One group of Cooperative Work Training (CWT) students will be screened for vocational interests during those times. The subject group will be asked to write down their particular vocational interest area prior to the administration of the PVRB-VIS. During the initial test session, responses will be tallied on a response form provided by the examiner (example attached). Three weeks, later the same process will ensue. At the close of the research session, data will be correlated using four distinct statistical approaches. Reliability coefficients will be derived in areas of total agreements, exact scores, kappa levels, and weighted averages. This procedure, when completed, should offer an extremely accurate assessment of test-retest reliability of the Valpar Vocational Interest Screening component.

Several points are realized regarding the responsible approaches toward the administration of this research project. First, no testing will begin without signed permission from all parties involved. This includes written permission from Illinois Department of Rehabilitation Services: owners of the 90 item slide/tape presentation of the VIS; written permission from the Executive Director of Eastern Illinois Area of Special Education acknowledging that research will be done within a Vocational Education classroom at Cumberland High School, Greenup, Illinois; and written permission stating the same from Mr. Mason Holmes, Superintendent, Cumberland Unit Dist. # 77. Second, parent permission slips shall be gathered prior to the actual administration of the Valpar Vocational Interest Screening. No subject will be considered without said permission. It is realized that neither the Illinois De-

Research Proposal
Page Two

partment of Rehabilitation Services nor the Eastern Illinois Area of Special Education holds any responsibility for this project at any point throughout the course of testing. As client confidentiality is of the utmost importance, subjects' names and locations of testing will not be reported in the results or thesis paper. This research is designed to measure only test-retest reliability aspects of the Valpar Vocational Interest Screening.

Regarding the use of the specific slide/tape hardware, all precaution will be taken to fully insure the safekeeping of the test material. Although it is unlikely to occur, full responsibility will be taken by this researcher in case of loss or accident. It will be the sole financial obligation of the examiner to replace all material in such event. To facilitate the transaction of equipment, the test equipment may be given to Ms. Sandra Johnson, representative of EIASE, who may act if so desired, as a liaison between the responsible borrower and lending agencies.

This is a technical research project. It is being undertaken as an obligation for the partial fulfillment of the requirements leading to a Master of Science in (Special) Education from Eastern Illinois University. Should further information be requested, please contact Mr. Roger Anderson, c/o Dr. Andrew Brulle, Department of Special Education, Eastern Illinois University, Charleston, Illinois 61920. Telephone: (217) 581-5315. Dr. Brulle is Chairman of Graduate Research at the University, Department of Special Education.

Further inquiry may be directly addressed to Mr. Roger Anderson at the following addresses:

Home: 1660 University Avenue
Charleston, Illinois 61920
Telephone: (217) 345-9324

Busn: Cumberland Elementary School
Cumberland Unit District #77
Greenup, Illinois
Telephone: (217) 923-3135

This paper is merely a proposal. All calendar dates may be negotiable at the request of any or all parties involved.

State of Illinois
Department of Rehabilitation Services
Robert W. Granzeler
Director



address correspondence to:
2487 North Monroe Street
Decatur, Illinois 62526

November 16, 1982

Mr. Roger Anderson
1660 University Avenue
Charleston, Illinois 61920

Dear Mr. Anderson:

I have carefully reviewed your proposal for utilizing the VIS for a research study.

The Department of Rehabilitation Services has no objection to the use of this equipment provided that it is understood that the Department of Rehabilitation Services student clients have priority in the utilization of the equipment and that the Department is furnished with a copy of the study.

If you have any questions or concerns, I would suggest that you contact John Smith, the Supervisor in our Mattoon Office.

Sincerely yours,


Jerome Morrison
Regional Executive Office

JM:ma

cc: John Smith
David Selby
Sandra Johnson

Appendix D
Modified Student Response Forms

RESPONSE FORM

SUBJECT _____

Test _____

Retest _____

1. 1 or r
 2. 1 or r
 3. 1 or r
 4. 1 or r
 5. 1 or r
 6. 1 or r
 7. 1 or r
 8. 1 or r
 9. 1 or r
 10. 1 or r
 11. 1 or r
 12. 1 or r
 13. 1 or r
 14. 1 or r
 15. 1 or r
 16. 1 or r
 17. 1 or r
 18. 1 or r
 19. 1 or r
 20. 1 or r
 21. 1 or r
 22. 1 or r
 23. 1 or r
 24. 1 or r
 25. 1 or r
 26. 1 or r
 27. 1 or r
 28. 1 or r
 29. 1 or r
 30. 1 or r

31. 1 or r
 32. 1 or r
 33. 1 or r
 34. 1 or r
 35. 1 or r
 36. 1 or r
 37. 1 or r
 38. 1 or r
 39. 1 or r
 40. 1 or r
 41. 1 or r
 42. 1 or r
 43. 1 or r
 44. 1 or r
 45. 1 or r
 46. 1 or r
 47. 1 or r
 48. 1 or r
 49. 1 or r
 50. 1 or r
 51. 1 or r
 52. 1 or r
 53. 1 or r
 54. 1 or r
 55. 1 or r
 56. 1 or r
 57. 1 or r
 58. 1 or r
 59. 1 or r
 60. 1 or r

61. 1 or r
 62. 1 or r
 63. 1 or r
 64. 1 or r
 65. 1 or r
 66. 1 or r
 67. 1 or r
 68. 1 or r
 69. 1 or r
 70. 1 or r
 71. 1 or r
 72. 1 or r
 73. 1 or r
 74. 1 or r
 75. 1 or r
 76. 1 or r
 77. 1 or r
 78. 1 or r
 79. 1 or r
 80. 1 or r
 81. 1 or r
 82. 1 or r
 83. 1 or r
 84. 1 or r
 85. 1 or r
 86. 1 or r
 87. 1 or r
 88. 1 or r
 89. 1 or r
 90. 1 or r

Appendix E

Contingency Tables used to Codify Raw Data

Subject _____

Group _____

	Retest Left	Retest Right	
TEST 1 Right	A Non-Agreement Cell	B Agreement Cell	<u>A+B</u>
TEST 2 Left	C Agreement Cell	D Non-Agreement Cell	<u>C+D</u>
	<u>A+C</u>	<u>B+D</u>	TOTAL _____